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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/715,015	11/17/2003	Jang-Won Moon	5649-1098	3312

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EXAMINER

HUR, JUNG H

ART UNIT PAPER NUMBER

2824

DATE MAILED: 06/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/715,015

Applicant(s)

MOON ET AL.

Examiner

Jung (John) Hur

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 April 2005.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-10, 15 and 16 is/are rejected.
7) ☒ Claim(s) 11-14 is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 17 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Amendment

1. Acknowledgment is made of applicant's Amendment, filed 06 April 2005. The changes and remarks disclosed therein have been considered.

No claims have been cancelled or added. Therefore, claims 1-16 are pending in the application.

Specification

2. Claim 15 is objected to because of the following informalities:

Said claim recites "logically OR'ing the column bank address and the second delayed signal to generate a second signal" which appears to lack proper antecedent basis in the figures or in the specification.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-7, 9, 10, 15 and 16 rejected under 35 U.S.C. 103(a) as being unpatentable over admitted prior art ("Admission") in view of Yu et al. (U.S. Pat. No. 5,828,612).

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Admission, in Figs. 1A and 1B, discloses a memory device, and a related method, comprising: a pair of data input/output lines (see for example page 1, line 14 of the instant specification); a delay precharge circuit (1000); a column bank address signal (CBA); a write enable signal (inherent); a precharge circuit (including a PMOS transistor; see page 1, line 12); a precharge control signal (PIOPRB); a first delayed signal (related to the output of 10); a first precharge control signal (related to the output of 15) rising in synchronization with a rising edge of the column bank address signal and falling a first predetermined time period (related to the delay of 10) after an immediately succeeding falling edge of the column bank address signal (see Fig. 1B); logically OR'ing the column bank address signal and the first delayed signal to generated a first precharge control signal (see Fig. 1A); precharging after the first predetermined time period following assertion of the column bank address signal when the write enable signal indicates a read operation (see for example page 2, lines 17-19); the precharge delay control circuit causing application of the first precharge control signal after a read operation (see for example page 2, lines 17-19).

Admission does not disclose a second precharge control signal rising in synchronization with the rising edge of the column bank address signal and falling a second predetermined time period after an immediately succeeding falling edge of the column bank address signal; logically OR'ing the column bank address signal and a second delayed signal to generated a second precharge control signal; precharging after the second predetermined time period following assertion of the column bank address signal when the write enable signal indicates a write operation; the precharge delay control circuit causing application of the second precharge control signal after a write operation; selecting one of the first precharge control signal and the second

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precharge control signal based on a state of the write enable signal; and the first predetermined time period being greater than the second predetermined time period.

However, Yu, for example in Fig. 3, discloses a first precharge control signal (see /PRECHARGE 110 in Fig. 3, related to a READ operation) with a first predetermined time period (related to t_2); a second precharge control signal (see /PRECHARGE 110 in Fig. 3, related to a WRITE operation) with a second predetermined time period (related to t_5); the second predetermined time period being shorter than the first predetermined time period (see Fig. 3); a write enable signal (R/W 102); and selecting the first precharge control signal for a write operation and the second precharge control signal for a read operation, based on the state of the write enable signal (see /PRECHARGE 110 in Fig. 3).

In view of Yu's teaching of the advantages of having different and independently optimized precharge delay depending on the type of access operation (see for example Yu, column 2, lines 36-41), it would have been obvious at the time the invention was made to a person having ordinary skill in the art, who is familiar with Admission, to modify the device and the related method of Admission to generate a second precharge control signal responsive to the bank address signal (in a manner similar to that of Fig. 1A of Admission, but with a shorter delay than that of the first precharge control signal), and to select the first precharge control signal for a read operation and the second precharge control signal for a write operation, determined by the write enable signal (for example, using a multiplexer, commonly used and well known in the art), for the purpose of increasing the frequency of operation (see, for example, Yu, column 2, lines 36-41).

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5. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Admitted Prior Art ("Admission") in view of Yu et al. (U.S. Pat. No. 5,828,612) as applied to claim 6 above, and further in view of Nitta et al. (U.S. Pat. No. 5,831,924).

The above Admission/Yu combination discloses a memory device as recited in claim 6, with the exception of the pair of data input/output lines being a pair of global input/output lines. Nitta discloses a pair of global input/output lines that are precharged (see for example column 3, lines 37-42). Since memories having a pair of global input/output lines that are precharged were common and well known in the art (as exemplified by Nitta), it would have been obvious at the time the invention was made to a person having ordinary skill in the art to apply the precharging means of the Admission/Yu combination to such memories, for the purpose of increasing the frequency of operation in such memories (see for example Yu, column 2, lines 36-41).

Allowable Subject Matter

6. Claims 11-14 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The record of the prosecution as a whole makes clear the reasons for the indication of allowable subject matter.

Response to Arguments

7. Applicant's arguments, see pages 8-10, filed 06 April 2005, with respect to the rejection(s) of claim(s) 1, 3 and 6 under 35 U.S.C. 103(a) have been fully considered and are

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persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of differently combining the previously applied references and different interpretation of the previously applied reference. See rejections above.

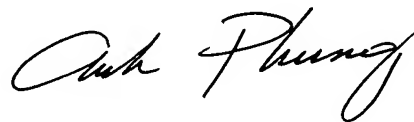
Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jung (John) Hur whose telephone number is (571) 272-1870. The examiner can normally be reached on M-F 6:30 AM - 3:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Elms can be reached on (571) 272-1869. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

jhh



**ANH PHUNG
PRIMARY EXAMINER**